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ABSTRACT

This study examined the abilities of kindergarten children on the four tasks of McCarty's (1967) Monetary Concepts Task Test. The sample was composed of 96 kindergarten children in a rural Oklahoma community. Nearly equal numbers of boys and girls participated in the study. Monetary tasks measured were the ability to (1) identify coins as money, (2) identify coins by name, (3) identify the value of coins, and (4) determine equivalent values of coins. Findings indicated that boys and girls differed only in their ability to identify the value of coins. Chi-square analysis indicated that kindergarten children were significantly more likely to identify the nickel and dime coins by name than by value. No significant difference was found in the children's ability to identify the penny, quarter, or half dollar by name or value. Implications and recommendations for curriculum content, design, and review, and for future research are briefly indicated. (RH)

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MONETARY CONCEPTS OF MALE AND FEMALE KINDERGARTNERS

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MONETARY CONCEPTS OF MALE AND FEMALE KINDERGARTNERS

There has been recent interest in the information which children already possess when they come to school (Fox, 1978). Fox (1978) noted that people obtain most of their economic information from areas other than formal education, this information usually coming from direct experience.

Strauss (1952) agreed with the idea that young children advanced by stages in their monetary concept development. As the child moves from level to level his behavior undergoes transformation. Strauss found that children could distinguish between money and non-money objects as early as three years of age, however, these three- and four-year-olds could not consistently match pairs of coins.

Strauss and Schussler (1951) hypothesized that "significant differences in logical reasoning among children of different ages exist." Three tests were given children in a monetary concepts test, and Strauss and Schussler found that certain items could not be passed unless "certain logical operations were previously mastered." This led to their conclusions that monetary concepts develop in stages and that certain concepts must be mastered before a child is able to move to the next stage (Strauss and Schussler, 1951).

Strauss and Schussler (1951) found that between the ages of 56 months and 71 months children were capable of distinguishing nickels from other coins. The child at this stage understood that money had to do with buying but felt any coin would buy anything. McCarty (1967) found that children's ability (1) to identify coins as money, (2) to identify coins by name, and (3) to identify the comparative value of coins, increased by age.

Robinson (1964) tested two groups of five-year-olds on their ability to identify six denominations of money. Each group consisted of 25 children from high socio-economic status. These children were first tested in February, 1962, and

again after a ten-week period in which the experimental group was presented planned learning experiences dealing with consumerism. At the first testing four children in each group were able to identify all the money, which included a one-dollar bill, a check, a quarter, a dime, a nickel, and a penny. In addition, four children in each group correctly identified five out of six items. After the ten weeks of planned experiences, 15 children in the experimental group showed score increases on money identification tests, in addition to the four children who maintained perfect scores. Ten children were able to identify all six types of money. The control group scores remained unchanged.

Danziger (1959) tested 41 Australian school children between the ages of five and eight years. They were asked a series of questions which dealt with various economic processes. He found that four stages occurred in the development of economic concepts:

> (1) An initial pre-categorical stage occurs when the child lacks economic categories of thought altogether.
>
> (2) At the second, or categorical, stage the child's concepts appear to represent a reality in terms of isolated acts which are explained by a moral or voluntaristic imperative.
>
> (3) At the third stage the child becomes able to conceptualize relationships as such, by virtue of the fact that a reciprocity is established between previously isolated acts. But these relationships are in their turn isolated and cannot be explained in terms of other relationships.
>
> (4) Finally, the isolated relationships become linked each other so as to form a system of relations. (pp. 239-241)

Tan and Stacey (1981) interviewed 120 Malaysian Chinese school children, aged 6 to 15 years to determine their understanding of socio-economic concepts. This study showed a developmental trend in the acquisition and understanding of socio-economic concepts very similar to those found in studies of Western children. Tan and Stacey (1981) concluded that each advance in economic concept development depends on the understanding of prerequisite notions.

Eliot (1932) and Neisser (1960) suggested that the emotional climate of the home was instrumental in the development of the child's attitudes toward money. Neisser (1960) stated that "children who grow up in homes where parents have been unable to meet their need for love may use money as a substitute for affection." Wohlner (1971) felt that parents' attitudes toward money largely determined how their children responded emotionally to money.

It has been found that children's concepts about the value and use of money follow a developmental sequence (Berti and Bombi, 1981). Berti and Bombi (1981) developed a category system of six stages which they felt children go through in their development of monetary concepts. The researchers arrived at these six stages by testing 80- children, eight boys and eight girls, at five different age levels. The stages were:

(1) no awareness of payment--In this stage the children did not pay during the store game or recognize money.

(2) obligatory payment--Children in the second stage recognize that the customer must pay, but they do not discriminate between various kinds of money or bills.

(3) not all types of money can buy everything--Children in this stages show that they do not consider all money types to be equivalent.

(4) sometimes the money is insufficient--In the fourth stage children recognize that some things cost more and some less and that certain types of money are not sufficient.

(5) strict correspondence between money and objects--Children in this stage establish an exact correspondence between the value of monetary denominations and the prices of objects.

(6) the correct use of change--Children in the sixth stage realize that "the excessive value of money, with respect to the price, may be compensated for the storekeeper's giving the difference in money to the customer." (Berti and Bombi, 1981, p. 1181).

Berti and Bombi (1981) concluded that the progression through the first four of these stages was developed around pre-operational thinking. These understandings seemed to depend on direct experience. The fifth and sixth stages involved the use of logical and mathematical operations.

Further research has been done using Jean Piaget's cognitive developmental theory as the basis for investigating the economic reasoning of children (Schug, 1983). Schug (1983) found that children's basic economic concepts fit well with the principles of cognitive development theory. This finding indicates that it might be beneficial for teachers to use theories of cognitive development to assist in the development of an economic curriculum appropriate to each grade level.

Young Children's Knowledge and Experience with Money

Prevey (1945) found that there was a significant relationship between the early practices that children had with acquiring and spending money and their ability to handle money wisely in the future. Many researchers (Andrews, 1932; Danziger, 1959; Eliot, 1932; Harris and Harris, 1964; Prevey, 1945; Wohlner, 1971) have stressed the importance of providing children with money of their own which they can use as a tool in developing management practices. Grojean (1972), in a study of preschool children, found that all the children had experiences in obtaining and spending money.

Investigators (Andrews, 1932; Dunsing, 1956; Grojean, 1972; Harris and Harris, 1964; Neisser, 1960; Wohlner, 1971) have found that young children usually received money from their parents in one of three ways: (1) through a dole system,

(2) by earning money from odd jobs, or (3) by an allowance. These investigators felt that an allowance was the best system for encouraging knowledge and wise use of money.

Wohlner (1971) advised that children should have their own money to handle and the freedom to make mistakes with their money. She also suggested that the family as a group should evaluate the child's wants and needs in order to determine an amount for beginning allowance. Then, as the child grows older and shows his ability to assume responsibility his allowance should be increased.

The Need for Consumer Education

The study of economics has shifted to curricula for lower grades as a result of many state mandates to include economics in the primary grades (Koeller, 1981). There have been several recent studies illustrating methods used to teach economics with children as young as kindergarten age (Bradford, 1980; Daane, 1980; Glazzard and Porter, 1979; Kourilsky, 1977; Spaur-Rowland, 1979).

Koeller (1981) looked at several key questions concerning economics and the education of young children. She stated that there was little doubt that young children should be exposed to economics education, but the question was how they should be taught and what they should be taught.

Kourilsky's (1977) study involved 95 children from 5 kindergartens. These children participated in a program of selected economics concepts for 30 minutes a day over an entire semester. When the program was completed the children were tested on their comprehension of ten concepts: scarcity, decision-making, opportunity cost and cost-benefit analysis, production, specialization, distribution, consumption and savings, demand and supply, business organization and business venture, and money and barter. It was found that generally children ages 5 to 6

years were able to master selected economic concepts by the end of the semester. These concepts included scarcity/economic problems, decision-making and cost-benefit analysis, production, and business organization. The highest level of mastery was found for the content in the unit of scarcity and economic problems. The most difficult area to master appeared to be specialization.

Ryan and Carlson (1973) studied first grade children to determine the effects of two teaching strategies, discovery and expository (telling), on their learning of economic concepts. Three groups of first graders were used: Group D (discovery), Group E (expository), and Group C (control). The lesson plans for Groups D and E were similar insofar as the plans for both groups contained the same five instructional elements. These elements were review, lead-in, investigation, summary, and future. The materials used in the instruction of Groups D and E were identical. Group D differed from Group E in that Group D subjects were provided with numerous opportunities to "discover" understandings, and learner involvement was provided for Group D. The C group was involved in a series of language arts lessons which lasted throughout the study while the D and E groups received social studies instruction. The results of this research indicated that the children who listened to records learned at a significant level, but the discovery strategies were less successful. The researchers felt that it is time to "...identify those requisite conditions which serve to set the stage for learners to thrive in discovery situations" (Ryan and Carlson, 1973, p. 447).

Implications for the Present Study

The following findings from the literature had implications for the present study: (1) children are involved in the consumer process at a very young age; (2) monetary concepts develop continuously and sequentially; (3) the development of monetary concepts depends upon the actual experience children have in the use of

money; (4) children are actively participating in the market place; and (5) there is the need for research to determine the levels of monetary competence of young children. Each of these findings could aid educators to develop a curriculum unit in helping children to understand monetary concepts specific to their different grade levels.

Purpose of Study

The major purpose of this study was to examine the abilities of kindergarten children on the four tasks of the Monetary Concepts Task Test developed by McCarty (1967). The sample was composed of 96 kindergarten children in a rural Oklahoma community. Nearly equal numbers of boys (n = 47) and girls (n = 49) participated in this study.

The monetary tasks which were measured were: (1) the ability to identify coins as money, (2) the ability to identify coins by name, (3) the ability to identify the value of coins, and (4) the ability to determine equivalent values of coins.

Instrument

The Monetary Concepts Task Test developed by McCarty (1967) and further validated by West (1971), Dunkin (1972), Harper (1973), Masters (1971), Dale (1973), and Anderson (1974) was used to determine the monetary concept levels of understanding for the subjects in this study. A description of the four tasks as reported by McCarty (1967) follows:

Test I--Money-Sorting Task

The purpose of the money-sorting task is to investigate the child's ability to differentiate coins as money.

Materials needed: A small purse containing coins (half dollar, quarter, dime, nickel, and penny) and non-money objects (a plastic fifty-cent piece, a bracelet charm resembling money, a plastic dime, a tin dime, a bus token, and a plastic penny).

Procedure: The child is shown the purse and told, "I have some real pieces of money for a real store and some 'pretend' pieces for a 'pretend' store." The coins and non-money objects are taken from the purse and shown to the child. He is then instructed to sort them by saying, "Put the real pieces of money for a real store over here (investigator indicates a place for the coins) and put the 'pretend' store over here." (Investigator indicates a place.)

The manner in which the child sorts the objects is recorded.

Test II--Coin Identification Task

The purpose of the coin-identification task is to investigate children's ability to identify coins by name.

Materials needed: Two quarters, two half dollars, two dimes, three nickels, and two pennies.

Procedure: The coins are placed before the child in the following pattern:

25-10-50

10-5-1-5-25

1-50-5

The investigator says, "I have some real pieces of money on the table, can you put your finger on a penny?" When the child responds, the investigator says, "Good." In this manner, the investigator directs the child either to put his finger on a penny or on a piece that is one cent, in the following order:

1. A penny
2. A nickel
3. A dime
4. A half dollar
5. One cent
6. Five cents
7. Ten cents
8. Twenty-five cents
9. Fifty cents
10. A quarter
11. Ten cents
12. A nickel
13. Twenty-five cents
14. A half dollar
15. One cent
16. A dime
17. Fifty cents
18. A penny
19. Five cents
20. A quarter

The child's correct responses are recorded. The child is credited with identifying the coin if both his responses are correct, e.g., two responses for a penny or two responses for one cent.

Test III--Comparative Value Task

The purpose of the comparative value task is to investigate children's ability to identify coins of greater and lesser value.

Materials needed: The half dollar, quarter, dime, nickel, and penny are paired twice in all possible combinations. The pairs are mounted on three by five cards so that the coin of greater value in each pair will appear once on the left and once on the right.

Procedure: The investigator asks the child, "Do you go to the store with your mother sometimes?" (child responds) "What do you buy?" (If candy is not mentioned, the investigator again asks, "Do you buy candy sometimes?") The child

is then shown the first card of paired coins. The investigator instructs the child to choose the coin of greater value by saying, "Show me the coin that would buy the most candy at the store." In this manner, the investigator instructs the child to choose the coin of greater value in each of the following pairs:

1. Half dollar - quarter
2. Dime - nickel
3. Penny - half dollar
4. Dime - quarter
5. Nickel - penny
6. Half dollar - dime
7. Quarter - nickel
8. Penny - dime
9. Nickel - half dollar
10. Quarter - penny
11. Dime - nickel
12. Half dollar-quarter
13. Penny - dime
14. Nickel - half dollar
15. Quarter - penny
16. Half dollar - dime
17. Nickel - penny
18. Dime - quarter
19. Penny - half dollar
20. Quarter - nickel

The child's choices are recorded on the score sheet.

Test IV--Equivalent Value Test

The purpose of the equivalent value task is to investigate chilDren's ability to match coins of equivalent value.

Materials needed: (1) a variety of small inexpensive toys; four were used for each child, and (2) a four-shelf rack on which the toys could be placed. A coin was glued to each shelf to indicate he price of the toy on that shelf (top shelf, nickel; second shelf, dime; third shelf, quarter; fourth shelf, half dollar), (3) four small purses or containers; one containing seven pennies and one dime for matching the nickel; one containing three nickels and eleven pennies for matching the dime; one containing five nickels, three dimes, and a half-dollar for matching the quarter and one containing three quarters, seven dimes, six nickels and a penny

for matching the half dollar. (It is helpful to match the color of the shelf to the color of the purse.)

Procedure: The child is shown four toys and the investigator instructs them to choose one by saying, "These are the toys I have in my store. You may choose one that you would like to buy." The investigator places the toy chosen by the child on the top shelf and puts the other toys out of sight.

The purse to be used in matching the nickel is given to the child. The investigator points to the toy saying, "Let's pretend that the (toy) costs this much (indicating the coin on the shelf). You may buy it with the money in this purse. Give me the money you would need to buy the toy." (The investigator holds out her hand as if to accept the coins.) When the child chooses his coins, the investigator records his choice and says, "Good. You could buy it with that purse, couldn't you? Now let us see if this purse will buy the toy?" (The purse for the dime is given to the child.) The investigator then moves the toy to the next shelf and says, "Now let's pretend that the toy costs this much" (indicating the dime). In this same manner, the child is requested to match the quarter and the half dollar with coins of equal value.

Findings

Hypothesis: There was no significant difference between kindergarten boys and kindergarten girls in their responses to the four tasks of the Monetary Concepts Task Test: (a) to identify coins as money, (b) to identify coins by name, (c) to identify coins, and (d) to determine equivalent values of coins.

The data were reported by number of correct responses. A t-test analysis was utilized to compare the responses of kindergarten boys and kindergarten girls, to the four tasks on the Monetary Concepts Task Test.

Upon examination of the data, it was noted that there was no significant difference between kindergarten boys and kindergarten girls in their ability to identify coins as money ($p = 0.7975$), to identify coins by name ($p = 0.9658$), and to determine the equivalent values of coins ($p = 0.9646$). There was a significant difference between kindergarten boys and kindergarten girls in their ability to identify the value of coins ($p = 0.0078$). The boys scored significantly higher than the girls at the kindergarten level in their ability to identify the value of coins.

The coin identification task on the Monetary Concepts Task Test was further analyzed using Chi-square to determine whether subjects could identify a coin more accurately by name or by value. This analysis was completed to determine whether name or value was more frequently known and which of these might be more beneficial to curriculum on monetary concepts. The additional findings were:

(1) Kindergarten children were significantly more likely to identify a nickel by name than to identify it by value.

(2) Kindergarten children were significantly more likely to identify a dime by name than to identify it by value.

(3) There was no significant difference in the kindergarten children's ability to identify the penny, the quarter, or the half dollar by name or value.

Implications and Recommendations

The data from this study suggested the following:

(1) Since there was a significant difference on only one area of the Monetary Concepts Task Test, separate curriculums for kindergarten boys and kindergarten girls would not be justified.

(2) Educators should examine the math curriculum to determine what monetary concepts are being taught as well as what should be included in the kindergarten program.

(3) The teachers of preschool and primary age children need to include concrete experiences in the handling of money as a part of their math curriculum.

(4) Similar studies need to be conducted with older children to determine their levels of understanding of monetary concepts.

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